

CLAIMS

1. An agitating ball mill with a grinding chamber containing grinding media, a stator and a rotor, which are arranged in the grinding chamber, an input opening and an output opening for feeding and removing grinding material to or from the grinding chamber, as well as a grinding medium separation device arranged in the grinding chamber upstream from the output opening, which is used to separate grinding media entrained in the grinding material from the grinding material before the latter is removed from the grinding space through the output opening, characterized in that the rotor (21) is shaped like a rotationally symmetrical element, and the stator (13, 14, 15) is formed by an inner surface of the grinding chamber (9) whose shape essentially compliments the rotor surface, and that the rotor (21) and the stator (13, 14, 15) have pins (22, 23, 24, 25) arranged over their entire respective surface, which extend from the respective surface and project into the processing space.
2. The agitating ball mill according to claim 1, characterized in that the grinding material input opening (11) is arranged in a radially outer area of the grinding chamber (9), and the grinding material output opening (12) is arranged in a radially inner area of the grinding chamber (9).
3. The agitating ball mill according to claim 1 or 2, characterized in that the rotor is essentially shaped like a truncated cone, wherein the grinding material input opening is arranged in the area of the wide truncated cone end, and the grinding material output opening is arranged in the area of

the narrow truncated cone end of the grinding chamber.

4. The agitating ball mill according to claim 1 or 2, characterized in that the rotor is essentially shaped like a double truncated cone, wherein the grinding material input opening is arranged in the area of the wide truncated cone end, and the grinding material output opening is arranged in the area of the narrow truncated cone end of the grinding chamber.
5. The agitating ball mill according to claim 1 or 2, characterized in that the rotor is essentially shaped like a disk (21), wherein the grinding material input opening (11) is arranged in the radially outer peripheral area, and the grinding material output opening (12) is arranged in the radially inner axial area of the grinding chamber (9).
6. The agitating ball mill according to claim 5, characterized in that the disk (21) has pins (22, 23) on both its two flat disk surfaces.
7. The agitating ball mill according to one of the preceding claims, characterized in that the grinding chamber (9) with its stator (13, 14, 15) and rotor (21) and the separation device (18) can be pivoted into a swiveled position in such a way that the separation device (18) arrives at a high location, which is higher than most of the entire grinding chamber volume.
8. The agitating ball mill according to claim 7, characterized in that the swiveled position is a non-operating position of the agitating ball mill.

9. The agitating ball mill according to claim 7 or 8, characterized in that the rotational axis of the rotor is essentially arranged horizontal in the operating position of the agitating ball mill.
10. The agitating ball mill according to one of claims 7 to 9, characterized in that the rotational axis of the rotor is essentially arranged vertical in the non-operating position.
11. The agitating ball mill according to one of claims 7 to 10, characterized in that most of the grinding chamber volume takes up between 50 % and 100 % of the entire grinding chamber volume.
12. The agitating ball mill according to one of claims 7 to 11, characterized in that high location of the separation device (18) is the highest location of the separation device achievable via swiveling.
13. The agitating ball mill according to one of the preceding claims, characterized in that the separation device (18) can be replaced.
14. The agitating ball mill according to one of the preceding claims, characterized in that the separation device (18) is a self-cleaning (26) grading screen.
15. The agitating ball mill according to one of claims 1 to 13, characterized in that the separation device is a paddle wheel.
16. The agitating ball mill according to one of claims 1 to 13, characterized in that the separation device is a separating gap.

17. The agitating ball mill according to one of claims 2 to 16, characterized in that the rotor (21) is a hollow rotor with at least one hole (21a) arranged radially inside the rotor (21) and at least one hole (21b) arranged radially outside the rotor, wherein, during operation, the auxiliary grinding media are transported along with a portion of the grinding material flow inside the rotor (21) from a radially inner hole (21a) to a radially outer hole (21b) via the centrifugal action of the rotor (21), and transported outside the rotor (21) with the entire grinding material flow from the radially outer hole (21b) to the radially inner hole (21a) via the pumping action of the grinding material input opening, so that the auxiliary grinding media circulate inside the agitating ball mill.
18. The agitating ball mill according to claim 17, characterized in that the radially inner holes (21a) extend in the circumferential direction given an inner radius  $R_i$  at the rotor (21), and the radially outer holes (21b) extend in the circumferential direction given an outer radius  $R_a$  at the rotor (21).
19. The agitating ball mill according to claim 17 or 18, characterized in that the hollow rotor (21) exhibits inner channels (21c), which each form a flow channel between at least one radially inner hole (21a) and at least one of the radially outer holes (21b).